



# **MASON LAKE MANAGEMENT PLAN**

**Prepared July 2006  
Approved for Forwarding to  
DNR: August-September 2006**

# **DRAFT**

# MASON LAKE WATERSHED MANAGEMENT PLAN

## List of Lake Advisory Group Members

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## PROCEDURE FOR MODIFYING LAKE MANAGEMENT PLAN & IMPLEMENTATION OF PLAN

The Mason Lake District will maintain an agenda item of “modifying lake management plan” for its meetings. Changes can be recommended anytime, but will only be acted upon at the annual meeting of the Mason Lake District bi-annually, starting in 2008.

The Mason Lake District will then review comments and decide whether to refer them to the Lake Advisory Group for further investigation. The Mason Lake District has the final vote on any changes in the plan. Proposed changes must also be submitted to the county Land & Water Conservation Departments and the Wisconsin Department of Natural Resources. The final draft will be available on the Mason Lake District and Town of New Haven websites and at the following physical locations: Adams, Columbia and Marquette County Land & Water Conservation Departments; Town Halls for Douglas, Lewiston and New Haven; the Wisconsin Department of Natural Resources; the Mason Lake District. Copies will be available on request.

The Mason Lake District and Adams County Land & Water Conservation Department will apply for a WDNR Lake Plan Implementation Grant once the plan has been approved by the WDNR. If granted, this will assist in the costs of the plan implementation. Other grants will also be applied for, if available. Implementation will occur even if no grants are obtained, although timing may be adjusted for lack of available funds.

## BASELINE INFORMATION

Mason Lake Surface Watershed covers part of three townships in three counties in Wisconsin: most of the watershed is in the Town of New Haven, Adams County; the next largest portion is in the Town of Douglas, Marquette County; and the smallest portion is in the Town of Lewiston, Colombia County.

The impoundment (man-made lake) has 855 surface acres, maximum depth of 9', with a surface watershed covering 28 square miles. The Town of Douglas owns the dam forming Mason Lake. Attached to Mason Lake by a channel is Amey Pond. Amey Pond is operated as a waterfowl refuge by the Wisconsin Department of Natural Resources and Duck Unlimited jointly.

The lake was first created in 1852 when a dam was completed with two flumes, one supporting a sawmill. The lake was named after the carpenter who built the

dam. The dam was rebuilt in 1891, but failed in December 1892 due to heavy ice. The dam was again then replaced. There was a dam break again in March 1993, with the new dam being completed later that year.

The primary water source for the lake is spring-fed Big Spring Creek flowing southeasterly into the lake. Big Spring Creek has an area designated as a Class I trout stream above the Big Spring Dam, but is designated Warm Water Forage Fishery below that dam. Also flowing into Mason Lake is an unnamed tributary to Big Spring Creek and another unnamed tributary flowing directly into the lake.

These creeks, along with Mason Lake itself, were placed on the 303(d) list of impaired waterways in 2002 due to five recognized problems: (1) high sedimentation; (2) high nuisance-level aquatic plant growth; (3) high phosphorus levels; (4) heavy algal growth; and (5) degraded habitat. A Total Daily Maximum Load determination needs to be made for Mason Lake by the Wisconsin Department of Natural Resources.

#### Watershed Land Use

A 2004 evaluation of the primary land uses in the surface watershed of Mason Lake found that 57.3% of it is used in agriculture. The next most common use was woodland (31.7%). Residential use only accounted for 6% of the surface watershed land use. Minimal uses were open grassland (1.1%) and water (3.4%).

There are a few small businesses in the watershed, mostly located in the Briggsville area along Highway 23. According to the Wisconsin State Historical Society, there are several archeological sites in the watershed consisting of burials, effigy and other mounds, campsites and a cemetery. There are some buildings in the Briggsville area that are on the National Historical Register.

The Mason Lake watershed was part of the Neenah Creek Priority Watershed Program from 1992 through 2002. Certain goals and projects were identified by that plan, published in 1992, although not all were achieved. A Targeted Runoff Management Grant was awarded to Adams County Land & Water Conservation Department for 2004 for the Mason Lake Management Plan. A final report on that project is in the process of being written.

In 2002-2003, the Mason Lake Management District conducted a citizen survey about lake conditions. 54% of the respondents were full-time residents; 27% were year-around weekend residents; the remaining were summer residents. While 26% of the respondents had owned their property less than 5 years, 20%

had owned their land over 30 years. Popular uses identified were boating, fishing, peace/solitude, entertaining friends, swimming and wildlife observation. Most respondents owned some kind of boat, with fishing and pontoon boats dominating. 53% of the respondents felt that both fishing and water quality of the lake had declined.

A similar survey was conducted by mail in early 2006 in preparation for writing the watershed management plan. 81% of those responding had property on the lake, with the largest number of respondents (32%) owning the property for 16 to 20 years. 40% of the respondents were full-time residents. Top four uses of the lake area identified were motorized boating, fishing, wildlife observation and scenery observation. Primary boat types used were pontoon, fishing and canoe, with 56% of the respondents using their boats only on Mason Lake. Nearly 57% thought the overall water quality was “fair”, with 51% holding that water quality had stayed the same, 38% feeling it had declined, and the balance believing it had improved. Similar results were found in evaluating the fishing quality of the lake. The most identified reasons for the condition of Mason Lake by survey respondents were (1) use of fertilizers, (2) agricultural input, (3) aging septic systems and (4) the invasion of exotics. Dense weed growth and heavy algae scum were voted as the highest problems in the lake.

Several public boat ramps are found on both the north and south sides of the lake. Lake community perception is that use of the lake appears to have been increasing, especially for fishing, and boat traffic has increased. There is heavy hunting in the area, including that of waterfowl, and several active sportsmens groups use the watershed area.

### Soils in the Watershed

Soils in the watershed range from clays to sands, with slopes from totally flat to over 30%. (over 1/3 more than 6% slope). Dominant soil type is Silt Loam (44.14%), followed by Loamy Sand (18.36%) and Sand (16.85%). Other soil types include Sandy Clay Loam (6.44%), Marsh/Muck (5.14%), Fine Sandy Loam (3.2%), Sandy Loam (3.26%) and Loam (2.48%). Water covers 5.91% of the surface watershed.

Dominant soils range from somewhat poorly drained to somewhat excessively drained, with moderate to rapid permeability in the surface layer and slow to rapid permeability in the subsurface layers. Land runoff is slow to rapid, mostly depending on slope. Available water capacity ranges from low to high, while natural fertility tends to be mostly low and organic matter content low to medium.

There are wide ranges of suitability for cropping, tree-production and engineering uses. Most of these soils have erosion, blowing and drought hazards as well. Depth to groundwater is mostly over 20', although there are some areas of perched water tables. Bedrock is mostly sandstone.

### Lake Morphometry

Mason Lake itself is mostly a large fairly-flat basin. It has a broad gradual littoral zone and a shallow basin, with most of the lake bottom populated by aquatic plants.

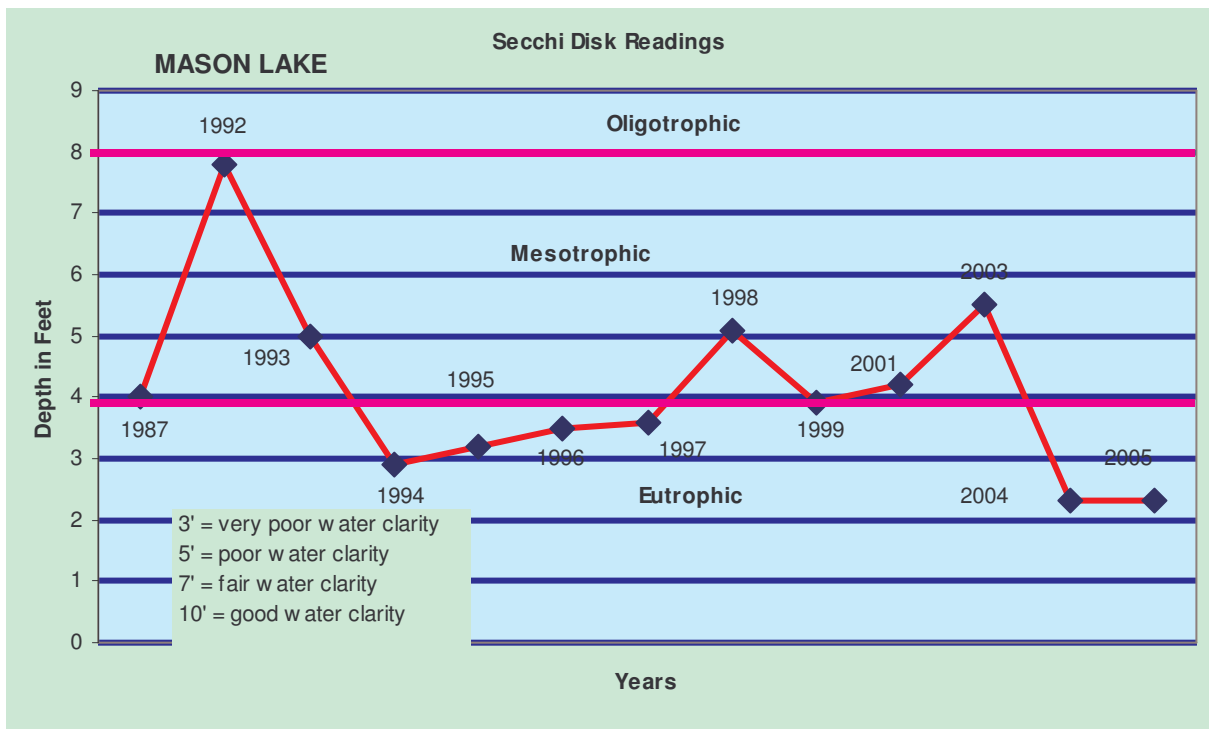
Sediment composition in the deeper zones is mostly organic and/or soft (silt, muck or combinations thereof). Sand and gravel dominate the shallow areas of the lake.

### Lake Chemistry

In a DNR report written in the 1960s, Mason Lake was classified as a "hard water drainage lake with low transparency." Both Amey Pond and Big Spring Pond were also characterized with hard water and low transparency. Mason Lake is one of the lakes chosen by the WDNR for long-term trend monitoring. It has been monitored on a regular basis by the WDNR since 1986.

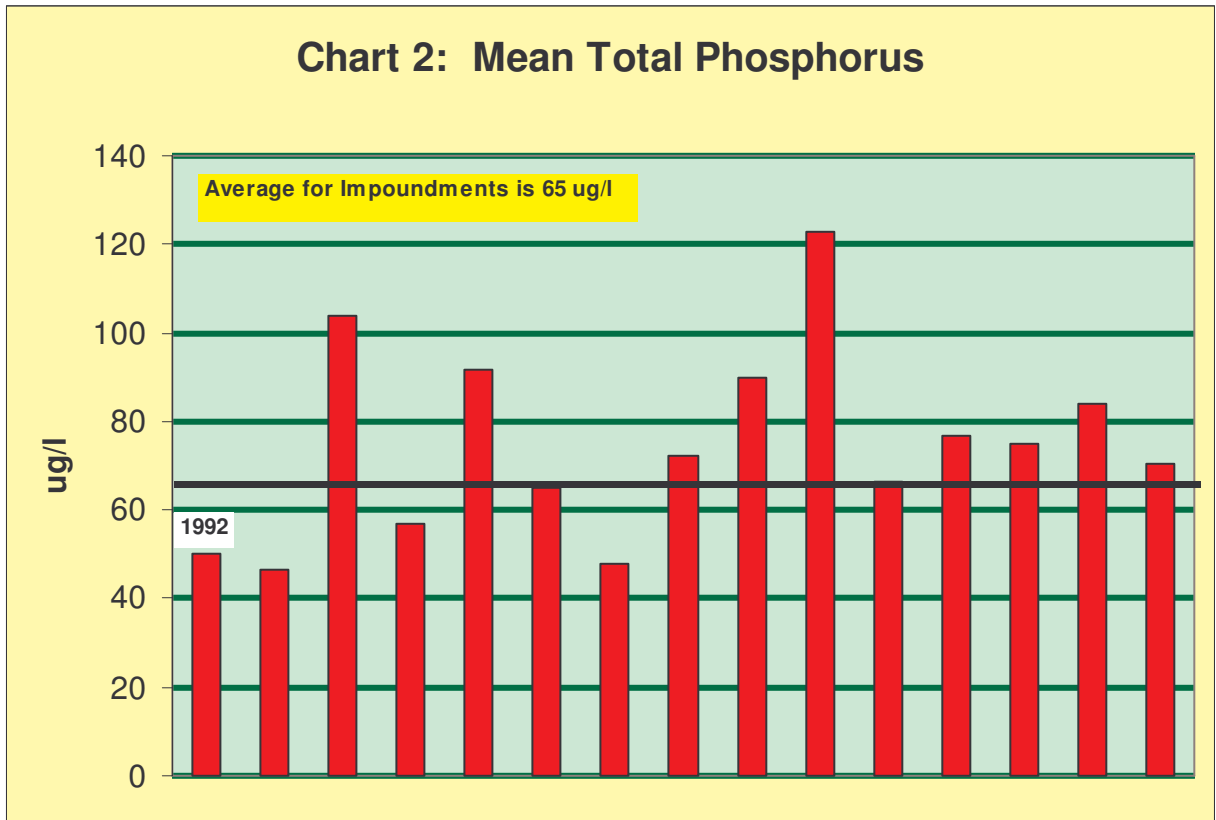
Secchi disk readings taken over the years have generally been low. For 1987, the average was 4'. For 1992-1993, it was 7.32'. For 1994-1996, it was 4.5'. During 1997-1999, it was 4.02'. In 2002-2003, the average was 5.05'. From 2004 to 2005, it was 2.8' average. This is an overall average from 1987 to 2005 of 4.62', placing Mason Lake's water clarity in the "very poor" to "poor" category, and the lake squarely in the "eutrophic" class. "Eutrophic" lakes are those high in nutrients that support a large biomass. They tend to be weedy and subject to frequent algal blooms. They may have large fish populations, including rough fish, but may also be susceptible to winter fishkill from oxygen depletion. Chart 1 outlines the average Secchi disk readings from 1987 through 2006.

**Chart 1: Average Secchi Disk Readings**



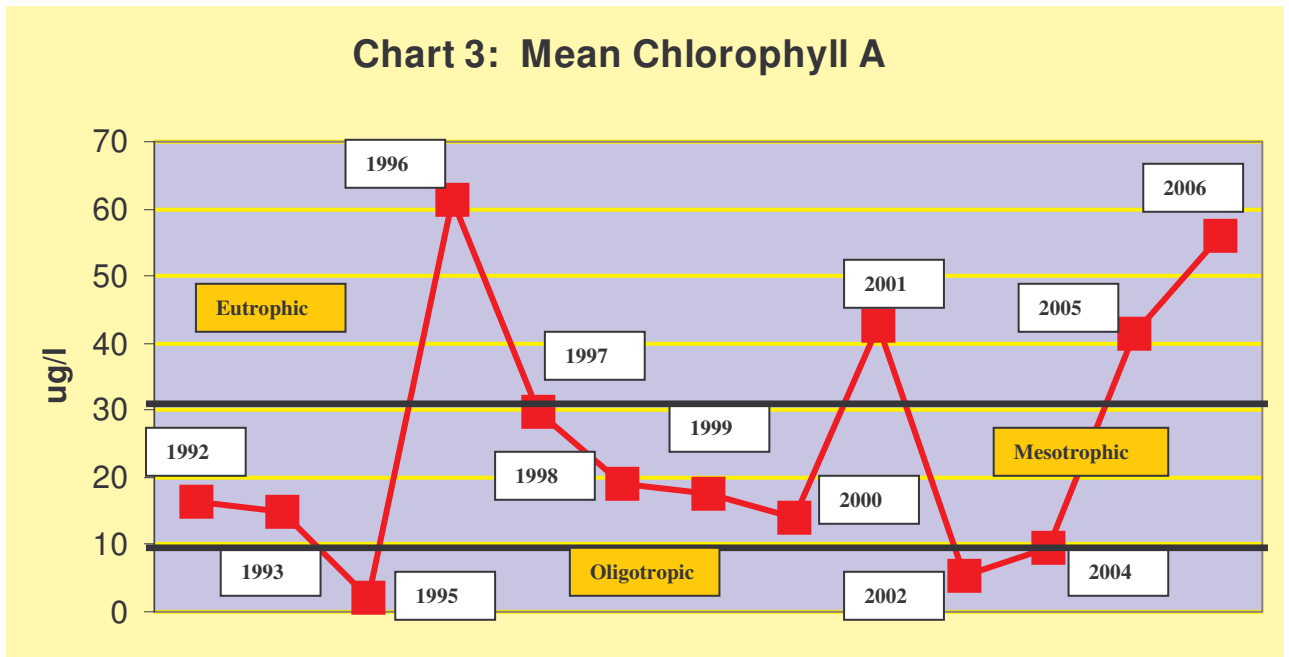
Another way of roughly measuring water quality is the total phosphorus readings. The Adams County Land & Water Conservation Department gathered historical phosphorus readings from the DNR and from the Self-Help Monitoring Records. It has also conducted several tests of its own in 2004 and 2005. Currently, the average total phosphorus reading (2004 to 2005) is 62.56 mg/l. Although this reading is about average for impoundments (such as Mason Lake), it is indicative of poor water quality, as well as again placing Mason Lake clearly in the “eutrophic” class of lakes.

Chart 2 indicates the summer mean total phosphorus levels for Mason Lake, starting in 1992. The mean for 1992-1997 was 59.85 ug/l. The mean for 1999 through 2003 went up to 65.6 ug/l. The mean summer total phosphorus for 2004 was only 9.55 ug/l, but went up again in 2005 to 41.38 ug/l and up again in 2006 to 56 mg/l. The overall mean summer total phosphorus level for Mason Lake for the past 24 years is 48.71 ug/l, below the 65 ug/l average for impoundments in Wisconsin.



Chlorophyll a is the third result often used in evaluating water quality. Studies show the level of this pigment correlates with algal bloom frequency. Mason Lake's summer mean chlorophyll a reading for 2004-2005 was 32.29 mg/l (no figures for 1994 and 2003 were available). An average reading of over 15 mg/l places a lake in the "eutrophic" class.





The waters of Mason Lake tend to be alkaline, with pH readings usually 8 or above. These levels of alkalinity are often found in hard-water. Since regular testing started in 2004, all hardness results have been “hard” or “very hard” for Mason Lake.

Readings for sodium, chloride, magnesium, sulfate and potassium in Mason’s waters have all been low, below any caution levels. Most of the turbidity results have been elevated over 1 NTU, suggesting turbid water and supporting the low Secchi disk readings.

A problem that may need to be dealt with is aging septic systems. Of the 2006 survey respondents, 51.4% had septic systems over 10 years old, with most of them being in the 500 to 1000 gallon size. 54.5% had septic sites within 200’ of the shoreline.

### Aquatic Plants

Mason Lake is a eutrophic lake with a long history of heavy aquatic plant growth and abundant, sometimes dense, algal growth. DNR records show complaints about aquatic plant and algae growth as far back as June 1935, when it was noted that “the water is quite green and weeds are coming up thick.” In 1954, a DNR observer wrote that the lake “looked like pea soup.” Scientific aquatic plant surveys started on Mason Lake in 1952. Surveys were done most recently in 1988, 1998, 1999, 2001 and 2005.

A 2002 report tracking changes in aquatic plants between 1988 and 2001 found that five of the six species that had increased were those that tolerated poor water clarity, while three of the six species that had disappeared or decreased were those not tolerant of poor water clarity. The conclusion in 2002 was that the aquatic plant community in Mason Lake had average diversity, but low quality, with abundant plant growth throughout the entire lake. Early summer growth was dominated by Curly-leaf Pondweed (*Potamogeton crispus*), Coontail (*Ceratophyllum demersum*) and Eurasian Watermilfoil (*Myriophyllum spicatum*). By summer's end, the latter two were dominant, since the Curly-leaf Pondweed had died off. Curly-Leaf Pondweed and Eurasian Watermilfoil are non-native invasive aquatic plants that have the potential for crowding out native vegetation, reducing the plant diversity of the lake, which generally leads to reducing the fish, invertebrate and wildlife diversity of the lake. Eurasian Watermilfoil, in particular, grows in large mats that can interfere with the recreational use of the lake.

The 2002 report suggested that the lake district engage in the following: (1) decrease winter drawdowns of lake levels to once every 3 to 5 years on an "as needed" basis, indicated by the previous growing season of EWM in the drawdown impact area; (2) discontinue using any broad spectrum chemical treatment; (3) start mechanical harvesting of aquatic plants, with timing and conditions designed around controlling Eurasian Watermilfoil and Curly-Leaf Pondweed; (4) encourage installation of shoreline buffers around the lake; (5) preserve or enhance wetlands in the watershed; (6) participate in educational efforts regarding water quality issues.

An aquatic plant survey was conducted again in June 2005 by staff of the Wisconsin DNR and Adams County LWCD. That survey found only 19 species of aquatic growth, with 90.7% of the sample sites vegetated. Coontail (*Ceratophyllum demersum*) had the highest overall frequency. Other aquatic species showing high frequency included Eurasian watermilfoil (*Myriophyllum spicatum*), Muskgrass (*Chara*), Long-Leaf Pondweed (*Potamogeton nodosus*), and Sago Pondweed (*Potamogeton pectinatus*). Filamentous algae occurrence has increased dramatically since 1992 and is high in all depth zones.

A review of plant densities and species types found in before 2001 shows that Mason Lake had below average diversity of aquatic growth and higher presence of plant species tolerating poor water conditions and high disturbance. However, for the first time, in the 2005 aquatic plant survey, no aquatic plant showed an above average growth density, and the survey showed decreases in

both frequency and density of the two exotic aquatic plant species that have plagued Mason Lake: Curly-Leaf Pondweed and Eurasian Watermilfoil.

When comparing the 1992 aquatic plant community to the 2005 aquatic plant community, there is only a 58% commonality. The Simpson's Diversity Index has increased from poor diversity in 1992 to good diversity in 2005. The percentage of the littoral zone that is vegetated and coverage of submergent species have decreased. The cover of emergent species has more than doubled, so that there is more of a mix between emergent, free-floating, floating-leaf and submergent species.

Historically, aquatic plant and algal growth has been addressed only by chemical treatment and winter drawdowns of the lake level. Between 1972 and 2001, 7235 pounds of copper sulfate, 80 gallons of Cutrine (containing copper), 370.75 gallons of aquathol (containing endothall, which is damaging to young fish), 445 gallons of Diquat and 51016 pounds of 2-4D were used on Mason Lake. Several of these chemicals, including copper, do not degrade, so now reside in the sediments of Mason Lake.

The 2006 report on the 2006 aquatic plant survey made several recommendations: (1) continue winter drawdowns, but on a decreased frequency, as they appear to be having success in controlling the exotic species and in opening up areas of former dense vegetation; (2) decrease the drawdown species to once every 3 to 5 years so that species that tolerate winter drawdowns don't increase to more than average density/frequency; (3) limit broad spectrum chemical treatments to concentrate on the non-native species only; (4) start a mechanical harvesting program that is timed and targeted on reducing the non-native species, removing nutrients from the lake, modifying fish habitat for edge effect and keeping channels open; (5) establish a natural buffer zone of native vegetation around the entire lake to allow for absorbing nutrients, pesticides or toxics before they reach the lake, to increase habitat and to encourage more aquatic plant diversity; (6) preserve & enhance the wetlands in and around Mason Lake and in the watershed; (7) cooperate with educations & other efforts to reduce nutrient & toxic runoff.

### Fishery

Mason Lake has a diverse fishery, including largemouth bass, perch, walleye, northern pike, and many panfish. Stocking records go back to the 1940s. There is a long history of fish kills for various reasons, including winterkill. On at least two occasions, there have been chemical kills of all fish in the lake to remove

carp (1955 and 1970). There is also a long history of rough fish removal through fishing (from the 1930s through the 1960s).

### Shoreline Use

During the 2005 aquatic plant survey, a survey of the shoreline was also conducted. Native plants from herbaceous cover to trees covered only 52.6% of the shoreline. Disturbed shoreline—including rock riprap, hard structures like piers & seawalls, and traditional lawn—covered 47.4% of the shore. Disturbed shorelines have been found to contribute negatively to water quality.

### Critical Habitat Areas

Under Wisconsin Rule 107.05(3)(i)(I), the Wisconsin DNR can evaluate a lake and declare particular areas of the lake as “critical habitat areas.” These are defined as “areas of aquatic vegetation offering critical or unique fish & wildlife habitat or offering water quality or erosion control benefits to the body of water.” (see Appendix F for map of critical habitat areas). Five areas of Mason Lake were identified as “critical”, comprising about 8600 feet of shoreline and the 60 acres of Amey Pond.

Disturbances within these sensitive areas must be limited. The 2003 report made several recommendations to preserve these areas: (1) protect emergent vegetation; (2) leave fallen trees at shorelines; (3) maintain natural shore vegetation; (4) made sensitive areas no-wake areas; (5) prohibit use of gravel, sand blankets or dredging in sensitive areas; (6) prohibit bank grading, wall installation, boat ramp or pier installations in such areas; (7) prohibit recreational boating in these areas; (8) create fish refuges, esp. in spawning areas; (9) create a flow control structure at Highway 23 to prevent winter dewatering of Amey Pond; (10) prohibit the filling of any wetlands.

### Wildlife and Endangered/Threatened Resources

The lake is a major stopping point for migratory waterfowl. There are also some resident waterfowl populations. There are both terrestrial and aquatic endangered or threatened resources found within the watershed.

Endangered or threatened ecosystems include alder thicket, northern wet forest, shrub-carr and southern sedge meadow. Endangered or threatened wildlife include Lake Chubsucker (*Emiizon sucetta*), Northern Ribbon Snake (*Thamnophis sauritus*), Weed Shiner (*Notrophis texanus*), Banded Killifish

(*Fundulus diaphanous*), and Barn Owl (*Tyta alba*). Longstem waterwort (*Elatine tocandra*) and Lesser Fringed Gentian (*Gentianopsis procera*) are the only endangered or threatened plants found in the surface watershed.

### Prior Management Plan

A lake management plan was produced in August 1992 by the Lake Mason Improvement Association and Aquatic Resources of Wausau (Randy Atkinson). This plan included an inventory of the existing conditions, such as land resource, watershed & streambank land use survey, water resource inventory and shoreline property owner's survey.

That plan identified Mason Lake's "number one problem" as "excessive nutrients" that were causing excessive plant growth and heavy algal blooms. The plan divided the attack on the issues into two main categories: Watershed Management; In-Lake Management:

Watershed Management: It noted that nutrient contribution from the watershed had decreased since the 1960s due to the installation of grass buffer strips and other conservation practices along many of the stream banks. There was also a continued problem with nutrient use on frozen ground. It was also determined that the ditching that had been installed was not sufficient to handle the runoff and flash flooding loads and that there were still some areas of streambank contamination & erosion that needed to be addressed.

To address these issues, the plan recommended: (1) increase of the cross-section of the ditches previously installed so that they could handle heavier loads; (2) installation of barnyard fencing; (3) installation of buffer strips where they were still absent; (4) restoration of meanders in the streams delivering water to Mason Lake; (5) restoration of wetland sites in the watershed; (6) protection of spring heads & rehabilitation of them where necessary; (7) creation of riffle areas in the streams; (8) "splashing" of groundwater coming into the lake to reduce nitrogen and CO<sub>2</sub>; (9) restoration of the failing dam at Big Spring Pond.

In-Lake Management: Potential contributors of nutrient loading were identified as wildlife, especially geese; lakefront owners & their practices; aquatic weed die-off; and fish die-off.

To address these issues, the plan recommended: (1) installation of a "green belt" buffer strip all around the lake; (2) fall pumping & replacement of aging septic; (3) aeration of artesian water flows; (4) reduced use of fertilizer on

lakefront property; (5) development of a wildlife control plan to reduce the amount of wildlife excrement entering the lake; (6) restoration of wild celery & wild rice beds at both Burns & Morris Cove; (7) restoration & protection of any eroded shore areas; (8) harvest of aquatic weeds to prevent nutrient loading from plant-dieoff; (9) harvest of fish to reduce nutrient loading from fish dieoff.

There does not appear to be a history of this plan being implemented.

#### Priority Watershed & Targeted Runoff Management

From 1992-2002, many conservation practices were planned in the Mason Lake surface watershed as part of the state's Priority Watershed Program for Neenah Creek. The watershed is also currently part of a Targeted Runoff Management Grant that expires in 2007. These plans have focused on reducing the amount of runoff into the streams in the watershed by installing various conservation practices in the farms along the streams.

Specifically, the Priority Watershed Report recommended: (1) removal of the Big Spring Dam; (2) reduction of agricultural sediment & nutrient input; (3) improvement of fish habitat; (4) improvement of public access; (5) limitation of any future stream channelization; (6) development of a Mason Lake District.

Plans have been made for the removal of Big Spring Dam, but the actual removal has not occurred. There has been some reduction of agricultural sediment & nutrient input through landowner cooperation with the Priority Watershed Program or the Targeted Runoff Management Program. Total success on that issue has not been achieved, however. The Mason Lake District was established. Should the Big Spring Dam removal occur, much of the previously-channelized stream area will be altered to a more natural meandering pattern, thus slowing the input of sediments & nutrients from the streams. Public access to Mason Lake is not a problem at this time.



# PRIORITY GOALS AND ACTIONS

## (I). Water Quality

### **A. Goal: Develop plan to improve water quality and reduce algal blooms.**

1. **Action:** Complete inventory of watershed lands to map bank erosion, buffer locations, inadequate ditches and buffers, non-point pollution, and to identify sites not in compliance with Wisconsin Agricultural Performance Standards and county ordinances.

**Responsibility:** Adams County LWCD.

**Time Schedule:** 2006

2. **Action:** Using updated inventory information and historical water quality data, determine water quality goals.

**Responsibility:** Adams County LWCDs Wisconsin Department of Natural Resources (WDNR), Mason Lake District, Lake Advisory Group (LAG)

**Time Schedule:** 2007

3. **Action:** Using same information (including historical information) and phosphorus loading modeling, determine and quantify nutrient reduction goal for annual reduction.

**Responsibility:** Adams County LWCD, WDNR.

**Time Schedule:** 2008

### **B. Goal: Identify pre-1992 private waste systems and develop plan for regular inspection and pumping.**

1. **Action:** Inventory and map septic systems in the watershed to determine and locate those septic systems not covered by Wisconsin Comm 83.

**Responsibility:** LAG, Mason Lake District, Adams Planning & Zoning

**Time Schedule:** 2008

2. **Action:** Develop plan for regular inspection and pumping of pre-1992 private waste systems.

**Responsibility:** LAG, Mason Lake District.

**Time Schedule:** 2009

**C. Goal: Educate watershed community, watershed users and the public regarding ways to improve water quality.**

1. **Action:** Gather information from WAL, UW-Extension, DNR, LWCD, NRCS and other sources to develop education plan for waterfront property owners and watershed citizens to improve water quality and about negative effects of land clearing, mowing, storm runoff, chemical use and erosion.  
**Responsibility:** LAG, Mason Lake District.  
**Time Schedule:** 2007
2. **Action:** Establish quarterly newsletter and website to publish all information.  
**Responsibility:** Mason Lake District, LAG.  
**Time Schedule:** 2006
3. **Action:** Review and update informational signs at all public access sites about actions citizens can take to improve water quality.  
**Responsibility:** Mason Lake District, LAG.  
**Time Schedule:** 2006
4. **Action:** Develop plan for sharing and exchanging information watershed-wide.  
**Responsibility:** Mason Lake District, LAG.  
**Time Schedule:** 2008

**D. Goal: Develop lake and stream monitoring program.**

1. **Action:** Develop and train group of volunteers to monitor water quality of streams.  
**Responsibility:** Mason Lake District, LAG, Adams County LWCD, WDNR.  
**Time Schedule:** 2007
2. **Action:** Develop and train volunteers to monitor water quality of Mason Lake in the watershed with the assistance of the DNR Citizen Monitoring Program.  
**Responsibility:** Mason Lake District, LAG, Adams County LWCD, WDNR.  
**Time Schedule:** 2007



## **E. Goal: Restore natural shore conditions in riparian areas.**

1. **Action:** Contact landowners for design and installation of best management shore restoration practices.

**Responsibility:** Mason Lake District, LAG, Adams County LWCD.

**Time Schedule:** 2008

2. **Action:** Obtain funding to assist in the installation of shore restoration best management practices.

**Responsibility:** Mason Lake District, LAG, Adams County LWCD, WDNR.

**Time Schedule:** 2008

## **(II). Aquatic Species Management**

### **A. Goal: Develop aquatic plant plan to improve water quality, to provide safe boating areas, to assist in reducing nutrient loading, to control invasive species and to improve aquatic habitat.**

ANALYSIS OF PLANT CONTROL METHODS				
<u>Method</u>	<u>Advantages</u>	<u>Disadvantages</u>	<u>Likely Effectiveness</u>	<u>Cost</u>
<i>Euhryciopsis leucontei</i> (weevils)	may already be present	too much developed shore	minimal, if present	over \$50,000 if bought
Restoration of Native Plant Community	provides habitat can slow spread of invasives	expensive difficult to get new plants going	questionable at this time	expensive for questionable effectiveness
Herbicides	rapid action targeted applications possible	increases nutrient level for plant growth long-term effects unknown	short-term: good long-term: questionable	\$20,000+ per year
hand removal	low-tech affordable selective	labor intensive not reasonable for large infestations	good for small areas	labor only
harvesting (cut & remove)	removes nutrients & plant mass targeted areas & timing possible	initial high-cost ongoing cost for employees & maintenance plant disposal	good for large chronic plant problems	initial: \$50,000 ongoing: varies on areas chosen & schedule

dredging/sediment removal	creates deeper water	very expensive	good for shallow lakes	\$1 million
	long-term results	need to dispose	with sedimentation	
		of "hazardous	issues	
		waste"		
		permit difficult		
		to obtain		
drawdown	inexpensive	may have severe	effective on evergreen	variable due
	moderate effectiveness	environmental	perennials, less so	to length &
		impacts &	on herbaceous ones	timing of
		riparian effects		drawdown

1. **Action:** Develop Aquatic Plant Management Plan based on 2005 Aquatic Plant Survey Report.  
**Responsibility:** Mason Lake District, LAG, Adams County LWCD, WDNR.  
**Time Schedule:** 2006
2. **Action:** Investigate updating bathymetric (depth) map of Mason Lake and, if financially possible, update map.  
**Responsibility:** Mason Lake District.  
**Time Schedule:** 2007
3. **Action:** Encourage hand-harvesting of aquatic plants of no more than 30' wide corridor (of each 100' shore) for access & viewing on lakefront properties.  
**Responsibility:** Mason Lake District, LAG.  
**Time Schedule:** 2006
4. **Action:** Pursue public and private funding for assistance in aquatic species management.  
**Responsibility:** Mason Lake District, LAG.  
**Time Schedule:** 2006-2011
5. **Action:** Recruit, train & implement volunteer program for invasive aquatic species monitoring in order to keep track of current infestations.  
**Responsibility:** Mason Lake District, LAG, Adams County LWCD  
**Time Schedule:** 2007-2008
6. **Action:** Recruit, train & implement volunteer-staffed program for Clean Boats, Clean Waters actions.

**Responsibility:** Mason Lake District, LAG, Adams County LWCD

**Time Schedule:** 2007-2008

**B. Goal: Control current invasive species (Eurasian Watermilfoil and Curly-leaf Pondweed) and prevent infection by other exotic aquatics.**

1. **Action:** Identify, map and spot-treat invasive species with species-specific chemicals.

**Responsibility:** Mason Lake District, LAG.

**Time Schedule:** annually

2. **Action:** Request Town of Douglas draw the dam down to the bottom of its winter operating range to assist in controlling Eurasian Watermilfoil.

**Responsibility:** Mason Lake District.

**Time Schedule:** annually

3. **Action:** Inventory lake to identify existence of native weevils.

**Responsibility:** Mason Lake District, WDNR.

**Time Schedule:** 2007

4. **Action:** Research electronic monitoring at public boat ramps and report findings to Mason Lake District, Lake Advisory Group, and volunteers.

**Responsibility:** Mason Lake District, LAG

**Time Schedule:** 2007

5. **Action:** Educate volunteers, lake users, lakefront owners and watershed community on identification and control of invasive species.

**Responsibility:** Mason Lake District, LAG, WDNR, Adams County LWCD.

**Time Schedule:** 2007-2011

**C. Goal: Protect designated critical habitat areas from mechanical and/or chemical disturbances.**

1. **Action:** Develop integrated aquatic plant management plan that protects critical habitat areas.

**Responsibility:** Mason Lake District, LAG, WDNR.

**Time Schedule:** 2006

2. **Action:** Educate watershed landowners and lake users about sensitive areas.

**Responsibility:** Mason Lake District, LAG, Adams County LWCD, WDNR.

**Time Schedule:** 2007-2011

**(III). Increase Lake Depth**

**A. Goal: Improve lake navigability.**

1. **Action:** Investigate increasing navigational channels at west end of lake.  
**Responsibility:** Mason Lake District, LAG.  
**Time Schedule:** 2007

**(IV). Water Quantity & Dam Issues**

**A. Goal: Maintain lake levels within WDNR-established range requirements in a manner that also enhances water quality and maintains stable flow out of dam while ensuring public safety, proper dam function and stable lake level.**

1. **Action:** Operate dam to levels set by WDNR.  
**Responsibility:** Town of Douglas.  
**Time Schedule:** annually
2. **Action:** Meet with dam owner regarding maintenance of winter drawdown.  
**Responsibility:** Mason Lake District.  
**Time Schedule:** starting in 2006
3. **Action:** Implement Emergency Action Plan for Dam Operation.  
**Responsibility:** Mason Lake District, Town of Douglas.  
**Time Schedule:** annually
4. **Action:** Communicate with the Town of Douglas about lowering lake levels slowly & consistently to prevent damage from heavy rain and/or snowmelt runoff when necessary.  
**Responsibility:** Mason Lake District, Town of Douglas.  
**Time Schedule:** 2007-2011

**(V). Fishery and Wildlife Issues**

**A. Goal: Maintain and/or improve fishery habitat in Mason Lake.**

1. **Action:** Protect northern pike spawning grounds with buffer strips & reduced frequency water level drawdowns (only every 3-5 years, instead of annual).

**Responsibility:** Mason Lake District, Town of Douglas.

**Time Schedule:** annually

2. **Action:** Consult with DNR aquatic plant specialist to improve/maintain fish habitat.

**Responsibility:** Mason Lake District, Lake Advisory Group.

**Time Schedule:** annually

3. **Action:** Seek funding for stocking and habitat increase.

**Responsibility:** Mason Lake District.

**Time Schedule:** annually

#### **B. Goal: Maintain predator fish populations.**

1. **Action:** Continue to stock walleyes and muskies, since they do not reproduce in Mason Lake.

**Responsibility:** Mason Lake District, WDNR.

**Time Schedule:** ongoing

2. **Action:** Encourage catch & release of fish, especially of predator fish.

**Responsibility:** Mason Lake District and local citizens.

**Time Schedule:** ongoing

#### **C. Goal: Reduce number of rough fish in Mason Lake.**

1. **Action:** Investigate methods of controlling or removing rough fish.

**Responsibility:** Mason Lake District, Lake Advisory Group.

**Time schedule:** annually

2. **Action:** Encourage bow shooting of carp & other rough fish.

**Responsibility:** Mason Lake District and local citizens.

**Time Schedule:** annually

### **(VI). Recreational Management**

#### **A. Goal: Maintain recreational opportunities in the lake and watershed while preserving the scenery, peace and solitude.**

1. **Action:** Request that Adams County LWCD provide information on no-wake regulations.

**Responsibility:** Mason Lake District, Lake Advisory Group.

**Time Schedule:** 2007

2. **Action:** Explore calculation of lake boat carrying capacity.  
**Responsibility:** Mason Lake District, Lake Advisory Group.  
**Time Schedule:** 2008
3. **Action:** Work with Counties and/or Towns to develop boating ordinances for no-wake areas and boat carrying capacity.  
**Responsibility:** Mason Lake District; Counties; Towns; WDNR  
**Time Schedule:** 2010

## **(VII). Watershed Management Issues**

### **A. Goal: Improve water quality of streams.**

1. **Action:** Using stream inventory, identify sites in streams that would be appropriate for restoration of meandering and contact the landowners of those sites.  
**Responsibility:** Mason Lake District, County LWCDs  
**Time Schedule:** 2008
2. **Action:** Develop plans & designs to restore stream areas identified in inventory.  
**Responsibility:** Adams County LWCD.  
**Time Schedule:** 2009-2011

### **B. Goal: Maintain and/or restore wetlands in watershed.**

1. **Action:** Inventory documented wetlands to determine what sites might need maintenance, restoration or enhancement practices to be fully functioning.  
**Responsibility:** Adams County LWCD, NRCS.  
**Time Schedule:** 2008
2. **Action:** Contact landowners with offer of plan, design and cost-share assistance.  
**Responsibility:** Adams County LWCD, NRCS.  
**Time Schedule:** 2009-2011
3. **Action:** Educate watershed landowners and citizens about the importance of functioning wetlands to water quality.

**Responsibility:** Mason Lake District, County LWCDs.

**Time Schedule:** 2008-2011

4. **Action:** Encourage and cooperate with Comprehensive Planning to preserve, restore and/or protect wetlands from further development.

**Responsibility:** Mason Lake District, Lake Advisory Group.

**Time Schedule:** 2006-2011